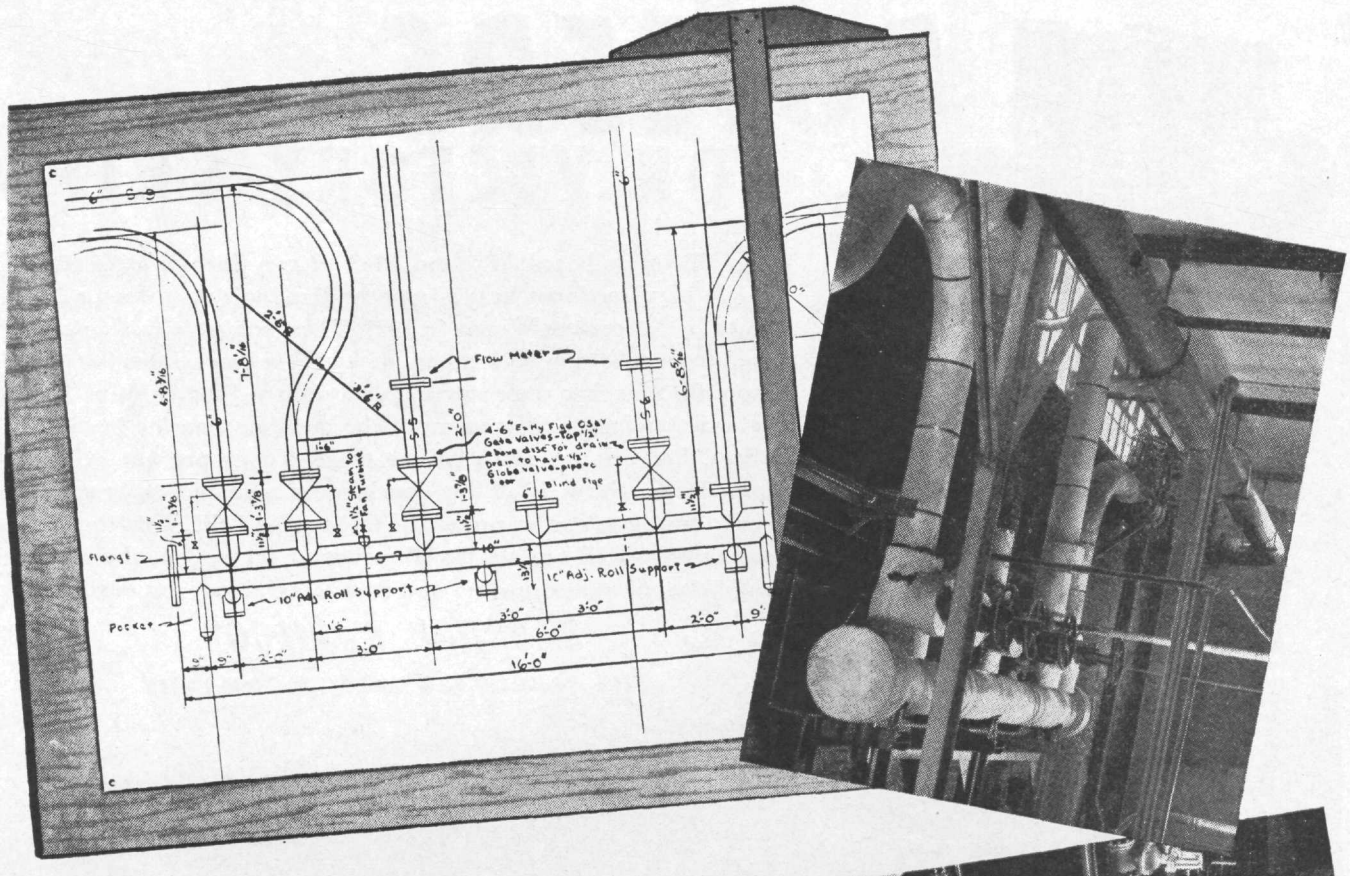
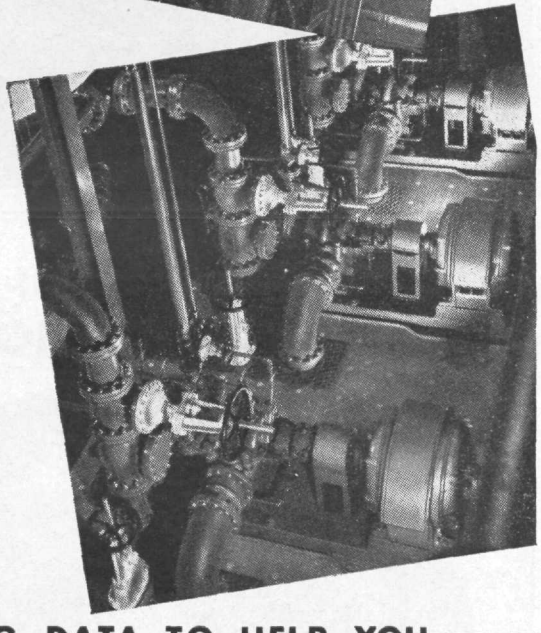


You can't take piping *for granted*

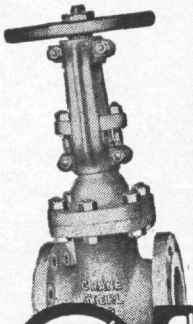
WHEN you draw a piping line on a blue print—when you indicate a symbol that means a valve—remember that ultimately those lines and symbols will have to be translated into hard metal, and that those lines you draw will have much to do with determining the success or the failure of the engineering project.

The parts that make up any piping system are many. But each one of these parts—the pipe, valves and fittings; the traps, joints and gauges; the flanges, unions, gaskets and insulation—is part of the complete Crane line.

When you are writing specifications, keep this fact in mind: Crane's single source of supply, Crane's experience, and Crane's reputation for high quality will do much toward assuring the success of the systems you design.



HERE'S ENGINEERING DATA TO HELP YOU



Crane engineers have prepared several important books and treatises on piping systems. These include the Crane Catalog, *listing more than 48,000 piping items and containing valuable engineering data*—Piping Pointers Manual, *packed with piping information*—Flow of Fluids *and* Combating Corrosion, *two technical papers of value to any one laying out pipe lines. This material is available from the following persons in your school, for reference.*

DR. J. R. WITHROW, *Chm. Chem. Engineering*

PROF. S. R. BEITLER, *Mechanical Engineering*

PROF. JOHN C. PRIOR, *Civil Engineering*

CRANE

VALVES • FITTINGS • PIPE

PLUMBING • HEATING • PUMPS

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Three incoming and three outgoing Lamson Dispatch Tubes keep the reservations personnel in constant touch with other departments.

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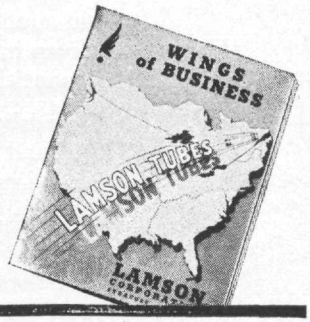
Makers of Tubes and Conveyors



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Because of the paper shortage we can send this booklet only to those who name their college and class.

Life  FROM A PLASTIC BAG!

THE MAN ADRIFT here is drinking sea water. But it is sea water that he has made drinkable by chemicals and a filter contained in a VINYLITE plastic bag*. The plastic—produced by CARBIDE AND CARBON CHEMICALS CORPORATION—has been made possible by the availability of synthetic organic chemicals, in which this Unit of UCC specializes.

But the story behind VINYLITE plastics is far more than just the history of another chemical development.

Rather, this unusual substance is indicative of the way man can learn—through years of uninterrupted research in the basic and applied sciences—to make better material than nature. It is one more confirmation of the continuing progress that is achieved by co-ordinating research, development and engineering.

The importance of VINYLITE plastic in helping to solve such vital needs as fresh water at sea is typical, in terms of human progress, of the stature already attained by many of the 160 synthetic organic chemicals that CARBIDE AND CARBON CHEMICALS CORPORATION now has in commercial production.

▼

**There are good reasons why a VINYLITE plastic is used in desalting bags. It can't mildew or rust. It is strong and tough, scuff-proof and shock-proof. It is chemical-resistant and sun-resistant. It is lightweight, transparent and flexible. It is non-flammable and cleanable . . . Engineers and executives interested in this material are invited to write for the booklet P-12 "Vinylite Plastic Sheet and Sheeting."*

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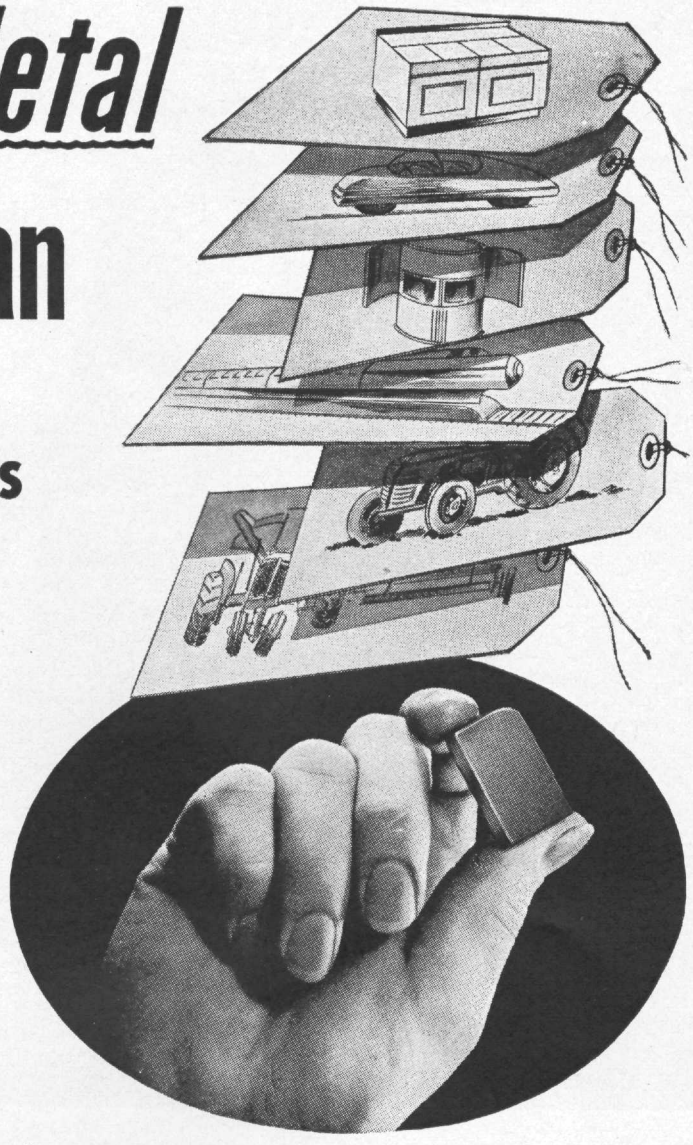
The Hardest *Metal* Made by Man

may write the price tags of tomorrow!



Starting as a metal powder, Carboloy Cemented Carbide is transformed, under heat and pressure, into an endless variety of shapes and forms—tool tips, dies and machine parts with the *super-hardness* that is vital to high-speed, low-cost industrial production.

IT TOOK a war production crisis to bring this magic metal into its own — to bring full appreciation of its value for metal-working tools and for "wear-proofing" parts.

The cold, hard figuring of comparative manufacturing costs soon will prove its full value in peacetime manufacture.

It is safe to say that Carboloy Cemented Carbide has revolutionized the thinking of industrial engineers and production men — not only as to materials and product design, but as to *tool performance and cost of manufacture.*

It started U. S. tanks rolling

An example! Without carbide tools the machining of armor plate for U. S. tanks would have been virtually impossible at the rate the emergency demanded. More than that, cemented carbides *saved millions of dollars and millions of manhours in manufacture.* As one noted authority recently said, "Today the tungsten carbides...perform miracles..."

We are in a new age of harder, tougher alloys — of special-purpose machinery — of longer life for products and parts — of closer tolerances combined with mass production.

For the coming "battle of costs"

Tomorrow's uses for Carboloy Cemented Carbide are widespread in many fields. Machining all types of hard and soft metals and plastics. Drawing wire and tubing. Drawing and forming sheet metal. "Wear-proofing" parts.

It has the *super-hardness* needed to handle modern metals. It works at speeds once thought impossibly high. It slashes machining costs—commonly doubles or triples the output of men and machines. It may well write the price tags in the coming "battle of costs."

Manufacturers in every field are invited to take full advantage of Carboloy engineering, experience and facilities in planning for the race to get better products to market, at lower cost, after the war.

CARBOLOY COMPANY, INC., DETROIT 32, MICHIGAN

CARBOLOY
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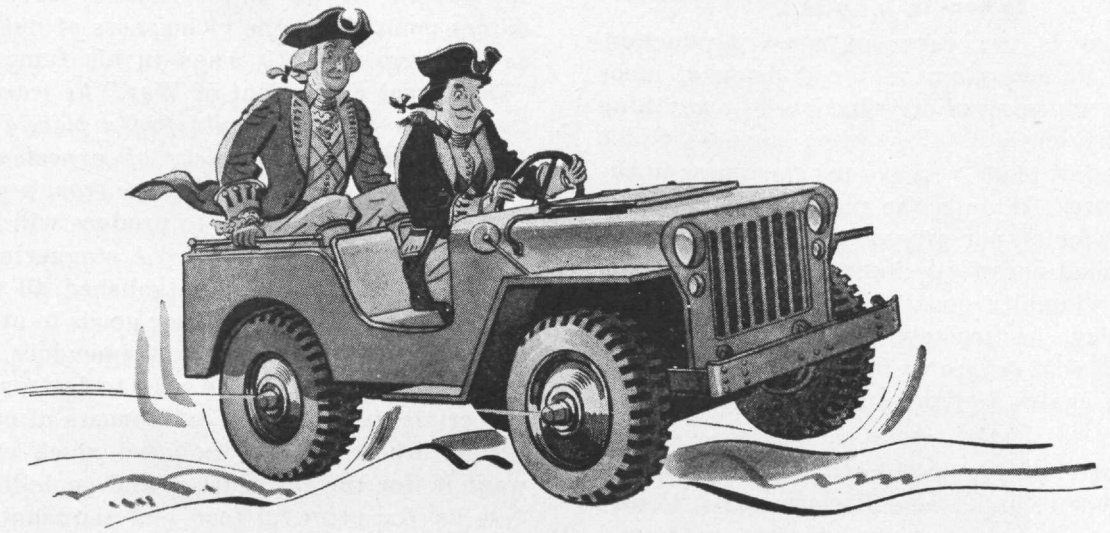
THE HARDEST METAL MADE BY MAN

George Washington could have had a Jeep



All the raw materials needed to build a jeep were obtainable in George Washington's time.

Only the knowledge of how to obtain them, refine them and fabricate them into such a vehicle was lacking.

At Alcoa, we call this important ingredient "Imagineering". That's our handy word for letting imagination soar and then engineering it down to practical use. And this is the kind of a job that has a special appeal for young men interested in the future.

It's exciting and exhilarating work to let your imagination have free reign on the possibilities of light, strong aluminum—then engineer it down to earth. So there is plenty of opportunity in the aluminum industry for young men with imaginations that refuse to be limited by traditions.

There is almost no limit to imagineering with Alcoa Alloys in making things lighter, more attractive, more economical. All this adds up to making Alcoa Aluminum available in a greater number of ways, to a greater number of people at the lowest possible cost.

You can let your imagination soar on the future of Alcoa Aluminum and the part it will play in building a better world. It will be used in places and for things undreamed of now.

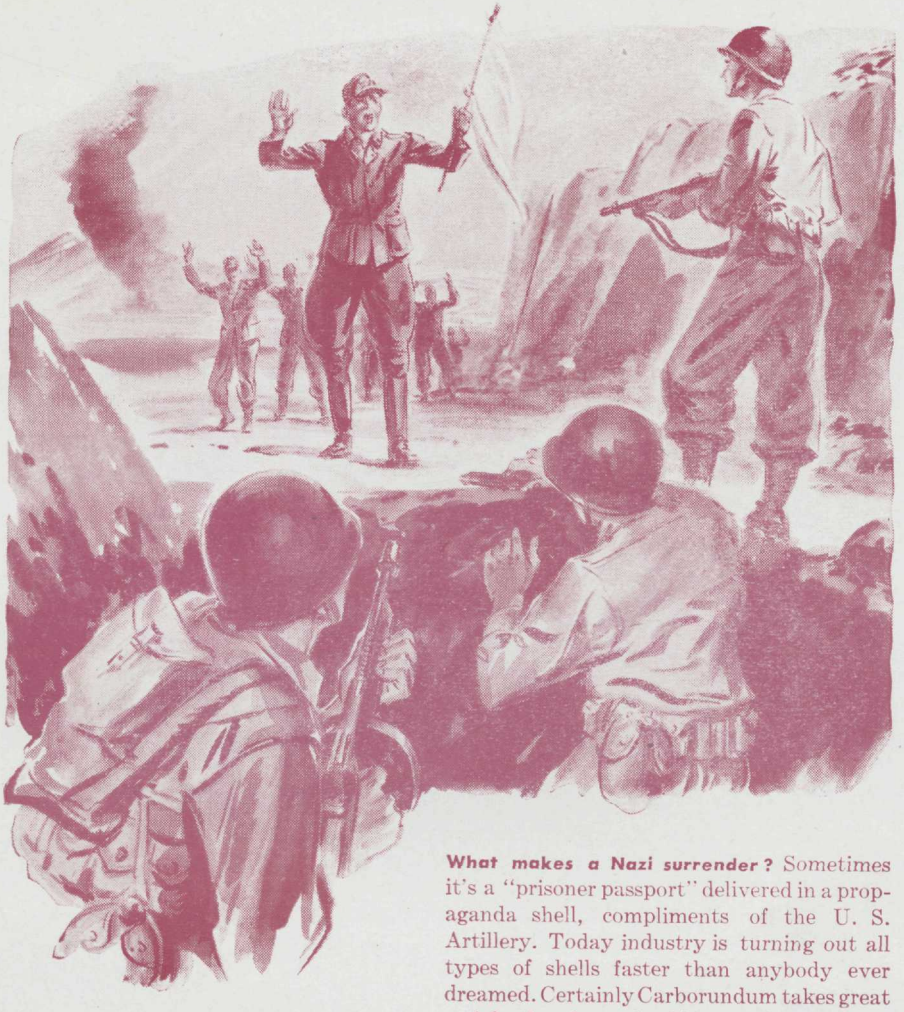
And we hope that many young men with vision will build their own future in the aluminum industry or in the many industries which will be using more aluminum than they have ever used before.

A PARENTHETICAL ASIDE: FROM THE AUTOBIOGRAPHY OF

ALCOA ALUMINUM

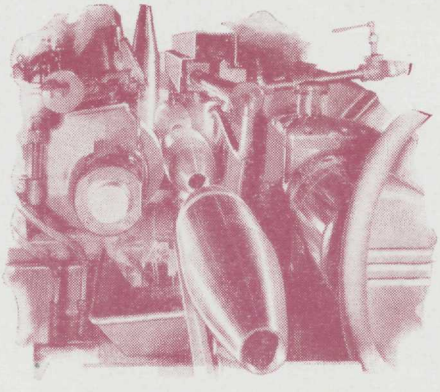
• This message is printed by Aluminum Company of America to help people to understand *what we do* and *what sort of men* make aluminum grow in usefulness.

The shell that brings 'em back alive-



What makes a Nazi surrender? Sometimes it's a "prisoner passport" delivered in a propaganda shell, compliments of the U. S. Artillery. Today industry is turning out all types of shells faster than anybody ever dreamed. Certainly Carborundum takes great satisfaction from the big part its products play in this vital war job! Nowadays shells big and little pour out of centerless grinding machines like this in a never ending stream.

Abrasives by Carborundum also keep tools sharp, and finish metal, wood and plastics. Super Refractories by Carborundum line high temperature furnaces and help solve the problems of the process and chemical industries. "Globar" electric heating elements increase the efficiency of high temperature heat treating furnaces, ceramic kilns, etc. This wide industrial coverage offers exceptional opportunities for Engineer-salesmen. If interested, please write The Carborundum Company, Niagara Falls, New York.



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G-E Campus News

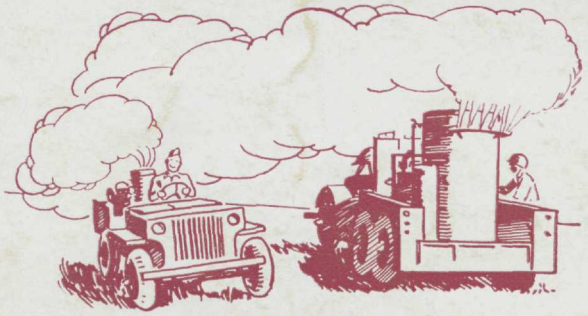
RESEARCH AND ENGINEERING KEEP GENERAL ELECTRIC YEARS AHEAD

CHRISTMAS DINNER IN THE TROPICS

IT is more than likely that many of the American boys in the South Pacific will have turkey for dinner this Christmas. It's not a military necessity, but it's good for morale, and high morale is an asset for any fighting force.

Good refrigeration equipment—the same sort that cools blood plasma, medical supplies, drinking water, and stores of ammunition—will make this possible.

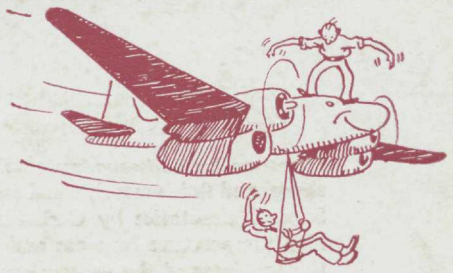
Recently, in collaboration with U.S. maritime and naval architects, General Electric engineers designed new, prefabricated refrigeration equipment for Victory ships which saves cargo space and materially reduces shipyard installation time. These refrigeration systems furnish 3½ tons of refrigeration for low temperature meat and fish rooms, and 3 tons of refrigeration at 40° F for vegetable, dairy, and thaw rooms. And six and a half tons is a lot of Christmas dinner in anybody's language.



JUNIOR

A LARGE smoke generator, principles for which were worked out by Dr. Irving Langmuir and Vincent Schaefer of the G-E Research Laboratory, produces a heavy blanket of smoke which has been used frequently to protect our men during landing operations. Now the Chemical Warfare Service has designed a smaller model.

"Junior" will fit into a jeep or a foxhole; can be carried by two men. With favorable wind conditions, it can blot out an area five miles long and 200 yards wide. The smoke will help the doughboys when the going is tough on jungle trails, mountain passes, and other vulnerable places.



NO STREAMLINING HERE

MOST airplanes look smooth. But some are definitely "lumpy." The plane which General Electric calls its flying workshop is of the lumpy variety.

It cruises high over Brownsville, Texas, carrying engineers and new equipment. Many new aircraft products and systems built in the laboratories and experimental shops of General Electric receive their first trial by air in this strangely shaped plane. It's one way G.E. makes certain that its aircraft equipment can stand the rigors of high altitude flying. *General Electric Company, Schenectady, New York.*

Hear the General Electric radio programs: "The G-E All-girl Orchestra" Sunday 10 p.m. EWT, NBC—"The World Today" news, every weekday 6:45 p.m. EWT, CBS.

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